

symptoms with permanent impairment of vision, which came on after extraordinary use of her eyes in writing music. The same method of treatment was again adopted, when it was found that the hypermetropic meridian was still further diminished while the myopic had increased.

DISCUSSION.

DR. SEELY.—I would ask Dr. Risley if he tested the balance of the muscles in these cases? Was there insufficiency of the internal recti?

DR. RISLEY.—In some of the cases there was and in others there was not insufficiency.

THE STOKES' LENS FOR MEASURING ASTIGMATISM.

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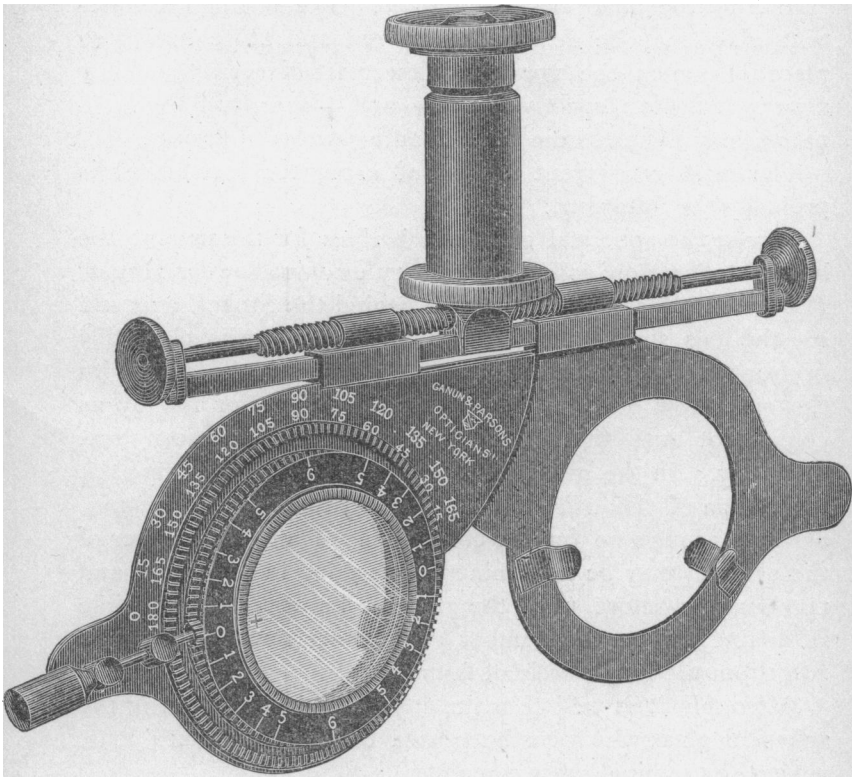
THE Stokes' lens seems hitherto to have been possessed of some intangible and unattainable value as an astigmometer. There are at least four different instruments, the independent inventions of as many different men, in which this lens is the principal factor, but up to the present time it has ranked as little better than an interesting toy.

The attention of the Society is called to an instrument in which it has been found of some use as a rapid and accurate measurer of that part of refractive irregularity which can be advantageously corrected by glasses, and which may be measured without the inconvenience of placing and replacing so many times, the glasses from the trial case.

It is nearly the same instrument which has been previously described in a much smaller mounting, for use on the back of the ophthalmoscope. As here shown it is fastened to one side of a frame corresponding to the trial frames, but so

placed upon a stand as to be easily swung in front of the patient and removed without inconveniencing him by its weight.

The accompanying wood cut will give a very good idea of its form. The lens is placed in front of one eye only, the other side of the frame is left open and has clips which will hold any glass or combination of glasses which is desired. The screw at the top, which supports the instrument, allows of its being turned so that the lens may be placed in front of either eye. It is not necessary to describe the Stokes' lens,



which of course is well known to all, but merely to say that the pinion at O., on the left of the cut as it now stands, turns the two component glasses in different directions, and so changes the strength of the lens without altering its axis,

but by withdrawing the pinion to the outer row of cogs, the whole lens is revolved in the same direction as the lower part, and so the inclination of the axis is changed without altering the strength of the lens.

The milled heads and twin screws extending across the top of the instrument will be recognized as the usual device for adapting the machine to different interpupillary distances.

A diamond mark on either side of each of the glasses shows by its distance from that on the other glass what is the strength of the cylinder represented, and this value may be read from the inner circle of figures. The axis of the resultant glass may be determined by red and white marks, so placed between the upper and lower set of cogs that they always indicate respectively the — and + axes, and the inclination may be read from the two outer circles of figures.

The most convenient method of using the instrument is probably the following :

Choose the spherical glass which gives for the patient the best distant vision, as in the ordinary examination for Hm. or My. Place this glass in position behind the Stokes' lens and set the lens so that it is equivalent to 1. D. cyl.; place this in front of the eye to be examined, pull out the pinion to the outer row of cogs, and revolve as slowly or rapidly as convenient until the letters on the test card are seen most distinctly. In the great majority of cases this will give the inclination of the axis at which the cylinder must be worn, and will require no further correction. Then the number of the cylinder may be determined by pushing in the pinion and revolving as before, until the greatest improvement possible is obtained, when the number of cylinder necessary may be read from the inner circle of figures.

After this it is well to make any needed correction in the spherical glass which has been used behind the Stokes' lens, when the examination is complete.

There is one difficulty in writing the prescription. It is this. Owing to the spherical element which always enters into the Stokes' lens combination, the spherical glass which was used behind the instrument must not be used in the

prescription, but it must be increased or decreased, as the case may be, by a glass just half as strong as the cylinder chosen.

The rule for this change is simple enough, and if any one will take the pains to write it out on a tag and fasten it to the instrument, he will probably never have to refresh his mind by looking at it.

The rule may be written as follows :

Write for either $+$ or $-$ cylinder of the same strength and inclination as indicated by the instrument.

Unite with that in the prescription a spherical glass, equivalent to that used on the back of the instrument, combined with a spherical glass of half the strength of the cylinder chosen and having the opposite sign.

Thus, suppose the patient's distant vision is best with the diamond mark on the glass opposite No. 2 on the inner circle of figures, and with the $+$ axis at 15° and the $-$ axis of course at 105° , and a spherical $+ 3$ behind the Stokes' lens.

The prescription may be written :

$$+ 2. \text{ D. cyl. } 15^\circ \subset (- 1. \text{ sph. } \subset + 3. \text{ sph.}),$$

which of course is equal to

$$+ 2. \text{ D. cyl. } 15^\circ \subset + 2. \text{ sph.}$$

Or if one chooses to write for a $-$ cyl., of course the same optical combination will be obtained by following the same rule, thus :

$$- 2. \text{ cyl. } 105^\circ \subset (+ 1. \text{ sph. } \subset + 3. \text{ sph.}) ; \text{ i. e.}$$

$$- 2. \text{ cyl. } 105^\circ \subset + 4. \text{ sph.}$$

Since writing the above paper Messrs. GaNun & Parsons of No. 19 West 42d Street, New York, have made one or two instruments with the Stokes' lens as above described on one side, and a couple of prisms similarly mounted before the opposite eye.

The prisms correspond exactly to Crètès' arrangement. They are manipulated in the same manner as the cylinders above described, and are calculated to save considerable time and trouble in the examination of muscular insufficiency and similar troubles.

The writer has very often found it convenient to set both

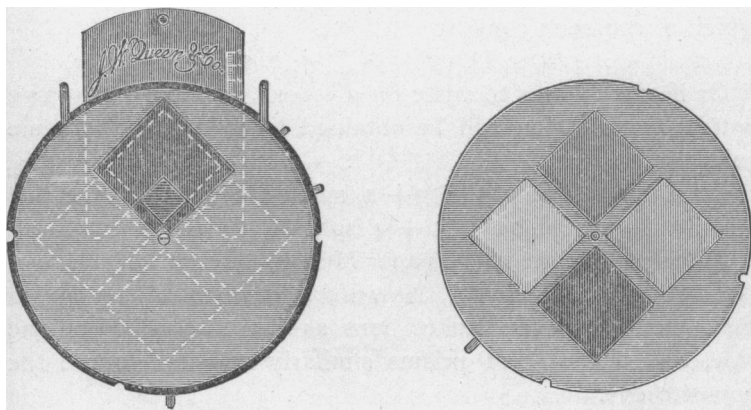
cylinders and prisms at O., and make the above apparatus serve in the ordinary examinations to take the place of the trial frames, thus saving the patient considerable delay and annoyance, as well as weariness, which comes from wearing and rearranging the heavy frames.

A DESCRIPTION OF SOME MODIFICATIONS IN A COLOR-SENSE MEASURE.

By CHARLES A. OLIVER, M.D.,

PHILADELPHIA.

THE original form of the instrument is described in the December, 1881, number of the "Archives of Ophthalmology." Since then there have been some modifications in the working machinery and additions to the contrivance, of sufficient importance to allow a short description. The plate has been made of zinc, painted dead-black on its outer face. The slide



is composed of dead-black vulcanite, bevelled up on the sides ; it runs up and down in two parallel bevelled flat brass rods that are firmly bolted to the back of the blackened disc. The order, number, and character of the colors upon the rotating cards have been changed. The first card has reflected red,